ON THE IDENTITY AND RELATIONSHIPS OF *BUCCINUM DERMESTOIDEUM*, Lam.: *PSEUDAMYCLA*, nov. gen.

By S. Pace.

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The object of the present note is to dispel the existing confusion regarding the designation of the common Australian Mollusc which is perhaps best known to collectors as *Columbella lineolata*, Pse.

Lamarck appears to have been the first to meet with the species, and his description[1] of *Buccinum dermestoideum*, although not a very full one, would apply perfectly well to the shell subsequently figured[2] under this name by Kiener from the Lamarckian collection. Kiener's figure is unmistakably intended to represent the Australian species, and not *Nassa cornicula* (Olivi) as has generally been assumed by later authors in consequence of both Lamarck and Kiener having given the Mediterranean as the habitat of *B. dermestoideum* (as also of so many other forms known not to occur in that sea). The equally erroneous locality 'West Indies' came next to be associated with this species: the specimens from the Cumingian collection, now in the British Museum, that were figured by both Sowerby[3] and Reeve[4] as *Columbella dermestoides*, being stated to come from that region. Angas[5] was the first to record the true habitat of this Mollusc, and he correctly identified specimens from South Australia and from Port Jackson as belonging to the species figured by Kiener; but, at a later date, imagining that his determination must have been erroneous in view of the discrepancy in the recorded distribution, he adopted Pease's manuscript name of *Columbella lineolata*. Meanwhile Pease, considering Lamarck's species to be identical with Olivi's *Buccinum corniculum*,[6] had renamed[7] the Australian shell *Columbella maculosa*, a name which he and others have frequently misquoted as *maculata*. To make matters worse, specimens in the British Museum have for

[1] Hist. nat. s. Vert., vol. vii, p. 275.
[2] Spec. gén. Coq. viv., *Buccinum*, sp. 51.
[3] Thes. Conch., *Columbella*, sp. 58.
[4] Conch. Icon., *Columbella*, sp. 144.
[5] Proc. Zool. Soc., 1865, p. 167; 1867, p. 195.
[6] Zool. Adriat., p. 144.
[7] Amer. Journ. Conch., vol. vii, p. 21.

years been labelled (in Angas' handwriting) *Columbella tessellata*, Gask., and shells have been pretty widely distributed among collectors under this name.

The main features of the literary history of *Buccinum dermestoideum* may be tabulated as follows:—

1822, Aug. "*Buccinum dermestoideum*": J. P. B. de Lamarck, Hist. nat. Anim. s. Vert., vol. vii, p. 275 [no fig.].

1834. "*Buccinum dermestoïdeum*, Lam.": L. C. Kiener, Spec. gén. Coq. viv., *Buccinum*, sp. 51, pl. xxv, fig. [fair] 100.

1844. "*Col. dermestoides* . . . . *Buccm. dermestoides*, Kiener": G. B. Sowerby I, Thes. Conch., *Columbella*, sp. 58, p. 131, pl. xxix, fig. [poor] 123.

[?] 1851, Dec. 25. *Colombella dermestoides*, Lam.: S. Petit de la Saussaye, Journ. Conchyl., vol. ii, p. 429 [name only, as coming from Guadeloupe].

1853, Oct. "*Amycla dermestoidea*, Lam.": H. & A. Adams, Genera Rec. Moll., vol. i, p. 187 [name only].

1858, Nov. "*Columbella dermestoides* . . . *Buccinum dermestoides*, Kiener": L. A. Reeve, Conch. Icon., *Columbella*, sp. 144 [fig. poor].

1859. "*A.* [*Amycla*] *dermestoidea* (*Buccinum*), Lamarck": J. C. Chenu, Man. Conchyl., vol. i, p. 202 [name only], fig. [good] 1099.

1865, Jan. 24. "*Columbella* (*Mitrella*) *dermestoides*. *Buccinum dermestoides*, Kiener": G. F. Angas, Proc. Zool. Soc., 1865, p. 167 [no fig.].

1867, Feb. 14. "*Columbella* (*Amycla*) *dermestoïdes*. *Columbella dermestoides*, Kiener": G. F. Angas, Proc. Zool. Soc., 1867, p. 195 [no fig.].

1868. "*Columbella* (*Amycla*) *dermestoides*, Kiener": J. C. Cox, Land & Mar. Shells Austral., p. 6 [name only].

1871, Aug. 1. "*Columbella maculosa*, Pse. [n.n. for *C. dermestoides*, Ang., non Lam.]": W. H. Pease, Amer. Journ. Conch., vol. vii, pp. 21–2 [no fig.].

1877, Feb. *Columbella lineolata*, Pease, non *C. dermestoides*, Kien.: J. Brazier, Proc. Linn. Soc. New South Wales, vol. i, p. 231 [no fig.].

1877, Mar. 6. *Columbella lineolata*, Pease: G. F. Angas, Proc. Zool. Soc., 1877, p. 182 [no fig.].

1878, Nov. 5. *Columella* [sic] *lineolata*, Pease: G. F. Angas, Proc. Zool. Soc., 1878, p. 865 [name only].

1883. *Columbella* (*Amycla*) *dermestoidea*, Lam.: G. W. Tryon, Syst. Conch., vol. ii, p. 179, pl. lvi, fig. [fair] 89.

1883, July 18. "*C.* [*Columbella* (*Mitrella*)] *dermestoides*, Kiener": G. W. Tryon, Man. Conch., vol. v, p. 131, pl. xlix, fig. [copies Kiener] 25.

1883, July 18. "*C.* [*Columbella* (*Mitrella*)] *lineolata* (Pease), Brazier": G. W. Tryon, Man. Conch., vol. v, p. 138, pl. li, fig. [poor] 53.

1889, Apr. "*Columbella lineolata*, Pease (Brazier) = *C. dermestoides*, Angas": J. Brazier, Journ. Conch., vol. vi, pp. 67–8 [no fig.].

1889. "*C.* [*Columbella*] *lineolata*, Pearse [sic]": T. Whitelegge, Invert. Fauna Port Jackson, p. 90, sp. 306 [no fig.].
1893. "*Columbella lineolata*, Pease, = *C. dermestoides*, Ang., non Kien.": D. J. Adcock, Aquat. Moll. South Austral., sp. 115 [name only].
1895. "*Columbella* (*Mitrella*) *lineolata*, Brazier": W. Kobelt, in Martini & Chemnitz, Conch. Cab., *Columbella*, p. 214, pl. xxix, fig. 12 [merely copies Tryon].
1896. "*Columbella* (*Mitrella*) *dermestoidea*, Kiener": W. Kobelt, in Martini & Chemnitz, Conch. Cab., *Columbella*, p. 234, pl. xxxii, fig. 1 [copies Kiener].
1901, Dec. 19. "*C.* [*Columbella*] *lineolata*, Brazier": R. Tate and W. L. May, Proc. Linn. Soc. New South Wales, 1901, p. 366 [name only].
——. *Columbella lineolata*: W. H. Pease, MS.
——. *Columbella maculata*: W. H. Pease, MS.
——. *Columbella tessellata*: J. S. Gaskoin, MS.

Since the publication of Sowerby's *Columbella* monograph, authors, while differing widely as to the specific name of the Australian shell, have all agreed that it should be classed among the Columbellidæ; although by several it has been referred to Adams' genus *Amycla*, which, strictly speaking, is Nassoid and not Columbelloid in its affinities. Upon purely conchological grounds this association of *Buccinum dermestoideum* with the Columbellidæ was fully justified, since the shell presents no characters of more than specific importance by which it can be separated from species which are beyond question true members of that family, and nothing has hitherto been known regarding the internal anatomy of this form. Recently, however, the examination of the dried-up remains of several animals which I have been enabled to soak out of shells in my own collection [1] has proved conclusively that the species must be removed from the Columbellidæ; and, since it is not possible to assign it to any established genus, I am proposing for its reception the new genus Pseudamycla.

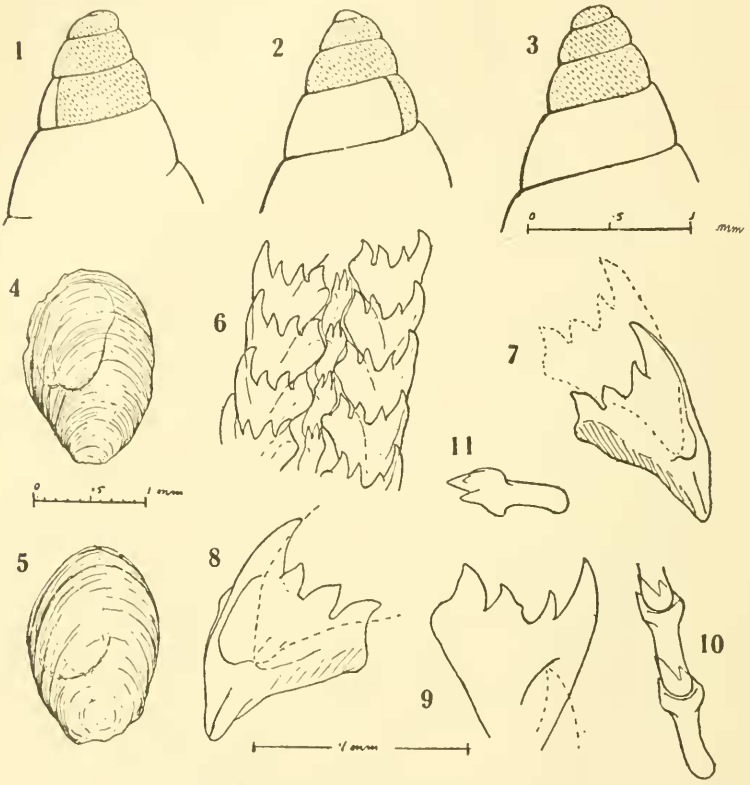
Pseudamycla dermestoidea (Lam.).

Shell and Operculum.—The shell of this species is too well known to require detailed description: it is readily recognized among Australian Prosobranchs by its Amyclæform contour, and its smooth or spirally striated whorls with their prettily tessellated marking. The protoconch (Figs. 1–3) is not sharply differentiated from the nepionic shell: its whorls are smooth and devoid of marking. The periostracum is thin and adherent, transparent and of a somewhat greenish tinge. The operculum (Figs. 4 and 5) pale-horn coloured, rounded and with apical or sub-apical nucleus.

External characters of Animal.—It is not yet possible to say very much regarding the external characters of the animal of *Pseudamycla*

[1] These were collected in Sydney Harbour.

dermestoidea. The body is apparently marbled with dark grey over its upper surface, while the sole of the foot is unpigmented. The tentacles appeared very short and stout, and although they arise very



Figs. 1–3. Various aspects of the apical whorls (slightly worn) of a young individual: the protoconch is shaded.
,, 4. Operculum.
,, 5. Ditto of another specimen.
,, 6. Portion of radula.
,, 7. Isolated lateral tooth viewed from its lower surface, showing mode of articulation.
,, 8. Ditto.
,, 9. Ditto viewed from the upper surface, showing depression which receives the outer cusp of the preceding tooth.
,, 10. Isolated rhachidian teeth seen from below, showing mode of articulation.
,, 11. Rhachidian tooth, lateral view.

(Figs. 7 to 11 are drawn to the same scale.)

close together they do not seem to be connate as are those of all Columbellidæ with which I am acquainted: the black eye-spots are borne near their bases on the external border. A pair of short caudal

tentacles, such as are met with in most species of Nassidæ, are seemingly present, though I was not able to make them out quite satisfactorily.

Radula.—The characters of the radula (Figs. 7–11) at once separate *Pseudamycla* from the Columbellidæ; and, while the radula is somewhat similar in type to that met with in *Pisania, Tritonidea, Cominella,* etc., nothing quite like it is known to me as being represented in any Buccinoid genus. Prof. H. M. Gwatkin also, who has kindly examined a specimen for me, can find nothing comparable with it among his extensive collection of radulæ. The radulæ of seven individuals were examined, and in each the structure was substantially the same. It consists of about 100 rows of the formula 1–1–1. The tridentate central tooth is remarkable for its comparatively small size, and for being much longer than it is broad. The laterals, having their bases much prolonged backwards, are roughly triangular in outline: they are armed normally with four cusps, but a minute denticle is occasionally present at the base of one or other of the cusps. The teeth appear to articulate with each other in the manner indicated in the figures, which were drawn after examining a large number of isolated teeth mounted in various positions in different media and under varying conditions of illumination, and they represent what I believe to be the true form of the teeth; but the correct interpretation of the structural details of a radula is always difficult, and, no matter how much time be expended upon the investigation, the result is never entirely satisfactory.

Regarding the systematic position of *Pseudamycla.* The supposed possession of caudal tentaculæ would strongly suggest affinity with *Nassa* and *Bullia,* and the shell is also not so very dissimilar, but the characters of the radula absolutely preclude any closer association with these groups than with the Columbellidæ. The radula of *Donovania minima* (Mont.) as figured[1] by the late Martin Woodward presents considerable similarity to that of *Pseudamycla,* but the details recorded are insufficient to enable me to judge if this resemblance is more than a merely superficial one. Anyhow, pending further investigation of the soft parts, *Pseudamycla* may best be placed among the Pisaniinæ.

As to whether any other supposed species of Columbellidæ will have to be transferred to *Pseudamycla,* only further anatomical research will decide, but I think it at least highly probable that *Columbella miltostoma,* Ten.-Wds., from Tasmania, will prove to be closely related to *P. dermestoidea,* and may even be conspecific with it.

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[1] Proc. Malac. Soc. Lond., vol. iii, p. 238.